NPDES No. PA 0111848

SAFETY LIGHT CORPORATION

APPENDIX D

RE: Pollutant Group E - Radioactivity

The sole detectable radioactive pollutant contained in SLC liquid wastes discharged to the river consists of the radionuclide Tritium (H), in very low concentration. Tritium which has a half-life of 12.25 years, emits very 'soft' beta particles having a maximum energy of 18-19 keV. Its presence in our liquid wastes results from product and hand washing operations assoicated with the manufacture of Tritium-filled self-luminous glass tubes. The Tritium is present as tritiated water (HTO).

In accordance with the requirements of our USNRC License No. 37-00030-08, and of Title 10, Code of Federal Regulations, Part 20 (i.e., Column 2, Table II of Appendix B) the maximum permissible concentration (MPC) of soluble Tritium (HTO) which can be discharged to unrestricted areas is 3×10^{-3} μCi H^3/mL H_2O.

Each 2300-odd gallon batch of liquid waste collected in a holding tank is assayed for Tritium content prior to dilution and discharge. The assay method involves use of liquid scintillation counting (LSC) techniques. The LSC unit employed is a Packard Model 4350 Tri-Carb, programmed for this particular analysis to count and record simultaneously beta particles present having energies lying in the individual ranges 0-19 keV (Channel A), 2-19 keV (Channel B), and 21-2000 keV (Channel C). To date, no detectable concentrations of beta particles having energy levels in excess of that of Tritium (i.e., 19 keV) have been observed - this indicates that, because of the absence of higher energy betas, no detectable beta radiation which would be associated with the Radium-226/daughter family is present.

In order to ensure that the Tritium concentration of our liquid wastes discharged into the river is always well below that specified in 10 CFR20, each tank of liquid waste is diluted during discharge with a predetermined amount of Bloomsburg Town water. Additional dilution is provided by non-contact cooling water being discharged simultaneously. Discharge times per 2300 gal. tank batch run approximately four (4) hours each, unless higher volumes of diluent water happen to be required for higher than normal tank water concentrations. During the 12 month period 11/1/87 - 10/31/88, a total of eleven (11) monthly discharges were made.

NOTE: It is only because of the fact that low levels of Tritium are present in our liquid wastes that discharge to the river is necessary. Otherwise, our diluted waste water could be discharged to our septic tank system.

APPENDIX ~~A~~ D (Continued)

A summary of data covering SLC liquid discharges made over the 12-month period (11/1/87 - 10/31/88) is presented as follows:

1) Total undiluted liquid waste collected	:	25,410 gal.
2) Total tap water diluent added	:	40,950 gal.*
TOTAL	:	66,360 gal.* (or 2.5×10^8 mL)
3) Total Tritium (as HTO) discharged	:	187,073 µCi
4) Average Tritium concentration in discharge	:	7.5×10^{-4} µCi/mL
5) % of 10CFR20 MPC	:	25%

Conclusion: Based on analytical data obtained for the 12 month period 11/1/87 through 10/31/88, the average concentration of Group E (radioactive) pollutants has been well below that specified in Title 10, Code of Federal Regulations, Part 20.